

Int Poster J Dent Oral Med 2004, Vol 6 No 02, Poster 217

Long-term success of furcation therapy in molars. A retrospective analysis

Language: English

Authors:

Dr. med. dent. Bettina Dannewitz,

Dr. med. Dr. med. dent. Ti-Sun Kim,

Prof. Dr. med. dent. Peter Eickholz,

Section of Periodontology, Departement of Conservative Dent., Clinic for Oral, Dental, and Maxillofacial Diseases, University Hospital Heidelberg

Date/Event/Venue:

June, 26-28th, 2003

81st IADR General Session and Exhibition

Göteborg/Sweden

Introduction

Furcation involvement (FI) is a risk factor for tooth loss. Treatment of multirooted teeth with furcation involvement aims to improve the prognosis of the teeth and to prolong their retention in the oral cavity.

Objectives

The purpose of this retrospective study was to assess the long-term success after therapy of furcation involved molars.

Material and Methods

Patients

- 70 patients (40 females)
- Mean age at the beginning of periodontal therapy 46 ± 9 years (from 20 to 59 years)
- Inclusion criteria: periodontal therapy of at least one molar, at least 5 years of maintenance care (MC)

Assessment of furcation involvement (FI):



Fig. 1) Preoperative radiograph of tooth 16 (10.10.1994)



Fig. 2) Intrasurgical assessment of FI (10.10.1994)



Fig. 3-4) resection of the mesiobuccal root (10.10.1994)

- Baseline clinical or intrasurgical measurement of the FI (Fig. 2)
- FI was assessed with a curved, scaled probe (Q-2N [SS+SSC] Nabers colour coded, Hu-Friedy, Chicago, IL, USA) according to the following classification of Hamp et al. [1975]:
 - *degree 0*: the furcation is not probable
 - *degree I*: horizontal loss of periodontal tissue support ≤ 3 mm
 - *degree II*: horizontal loss of support > 3 mm, but not encompassing the total width of the furcation
 - *degree III*: horizontal through-and-through destruction of the periodontal tissue in the furcation

- In case of different degrees of FI in one tooth, the molar was characterized by the most severe furcation defect.

Periodontal therapy:

- Periodontal therapy was carried out in the Section of Periodontology, University of Heidelberg during the years 1992 to 1996.
- Therapy comprised two sequential stages of treatment:
 - *Active periodontal therapy (AT)*, professional cleaning and oral hygiene instructions, and if required further periodontal surgery (scaling and root planning [SRP], flap-surgery, tunnel preparation, root-resection, regenerative therapy)
 - *Maintenance care (MC)*, was scheduled between 3 months and one year according to the patient's individual risk for periodontal disease progression
- The mean follow-up period was 77 months (between 60 and 123 months)

Statistical analysis:

- Descriptive analysis of the data (mean, standard deviation), statistical analysis with the Chi-square-test
- Survival rate of the molars was calculated in relation to jaw, tooth type, and degree of FI using the Kaplan-Meier analysis and displayed as survival curve over the follow-up period (Systat® for Windows, version 10.0, Systat Inc., Evanston, IL, USA)



Fig. 5) Postoperative radiograph of tooth 16 (26.02.1996)

Fig. 6) Clinical situation 5 years after root-resection (21.02.2000)

Results

- At baseline of periodontal therapy the 70 patients presented a total of 501 molars (Tab.1):
 - Maxilla: 243 (48.5%), mandible: 258 (51.5%)
 - First molars: 191 (38.1%); second molars: 239 (47.7%); third molars: 71 (14.2%)
 - degree 0: 195 (38.9%); degree I: 119 (23.8%); degree II: 122 (24.3%); degree III: 65 (13%)
 - 72.8% of the maxillary molars had a probable FI but only 50% of the mandibular molars ($p < 0.001$)
 - FI of degree II or III was significantly more frequent in the maxilla (48.1%) compared to the mandible (27.1%; $p < 0.001$)

FI (degree)	maxillary-molars (n=243)			mandibular-molars (n=258)			total number
	1.	2.	3.	1.	2.	3.	
0	15	31	20	35	59	35	195
I	25	30	5	26	26	7	119
II	37	38	2	19	25	1	122
III	21	18	2	13	12		65
total number	98	117	28	93	122	43	501

Tab. 1: Number of molars at the beginning of periodontal therapy

- *AT* (Tab. 2): 27 molars did not receive any further periodontal treatment (5.4%; 22 of them without FI), 126 molars were subjected to non-surgical therapy (SRP; 25.1%), and 230 to flap-surgery (45.9%); tunnel preparation was performed in 12 molars (2.4%), root-resection in 18 (3.6%), and regenerative therapy in 56 teeth (11.2%), 32 molars were extracted (6.4%)

FI (degree)	therapy	maxillary-molars (n=243)			mandibular-molars (n=258)			total number (501)
		1. (98)	2. (117)	3. (28)	1. (93)	2. (122)	3. (43)	
0 (195)	none	3	3	5	4	3	4	22
	SRP	5	7	3	15	32	9	71
	flap-surg.	7	16	10	13	24	16	86
	GTR		1		1			2
	tunnel-prep.							
	root-resec.				1			1
	extraction		4	2	1		6	13
	none				1	2	1	4
	SRP	6	10	3	7	4	2	32
	flap-surg.	15	17	1	15	15	3	66
GTR	2	2		3	3		10	

I (119)	tunnel-prep.							
	root-resec.	2				1		3
	extraction		1	1		1	1	4
	none							
II (122)	SRP	10	5	1	2	1		19
	flap-surg.	14	23	1	10	14	1	63
	GTR	10	7		6	9		32
	tunnel-prep.					1		1
III (65)	root-resec.	3	1		1			5
	extraction		2					2
	none					1		1
	SRP	2			2			4
total number (501)	flap-surg.	7	4			4		15
	GTR	4	4		2	2		12
	tunnel-prep.		1		7	3		11
	root-resec.	5	2			2		9
total number (501)	extraction	3	7	1	2			13
	none	3	3	5	5	6	5	27
	SRP	23	22	7	26	37	11	126
	flap-surg.	43	60	12	38	57	20	230
total number (501)	GTR	16	14		12	14		56
	tunnel-prep.		1		7	4		12
	root-resec.	10	3		2	3		18
	extraction	3	14	4	3	1	7	32

Tab. 2: Treatment of the molars in the active periodontal therapy (AT)

- MC (Tab. 3): further 27 molars were lost (6%, maxilla: 13; mandible: 10) from 1 up to 82 months after AT (mean 26 ± 24 months)

FI (degree)	therapy in AT	maxillary-molars (n=14)			mandibular molars (n=13)			total number
		1.	2.	3.	1.	2.	3.	
0	none			2			1	
	SRP				1	1	1	10
	flap-surg.				2		2	
I	none					1		
	SRP					1		
	flap-surg.	3	2		1			8
II	root-resec.							
	SRP							
	flap-surg.					1		1
III	SRP	2						
	flap-surg.	1				1		
	root-resec.	2	1					8
total number	GTR		1					
		8	4	2	4	5	4	27

Tab. 3: Toothlost during the maintenance care (MC)

- Molars with degree III FI revealed the highest mortality (36%; AT: 22%, MC: 14%); 16 out of a total of 21 extracted molars with a baseline degree III FI were maxillary teeth
- Molars displaying a degree III FI showed a statistically significant lower survival probability compared with molars devoid of FI or degree I and II FI ($p < 0.05$, Fig. 7)

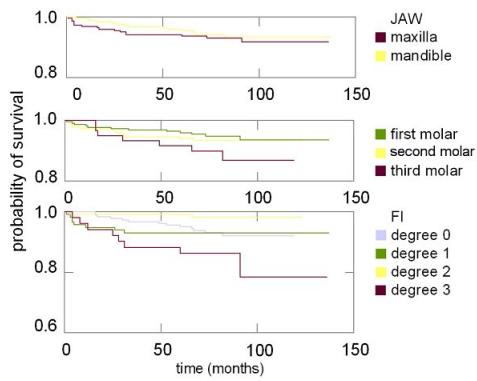


Fig. 7: Survival rate of the molars

Conclusions

- After therapy, the prognosis of molars with baseline degree I and II FI was similar to that of molars without FI.
- Mandibular molars with degree III FI seem to have a better prognosis than maxillary molars with degree III FI.

Abbreviations

- FI: furcation involvement
- SPT: supportive periodontal therapy
- APT: active periodontal therapy
- SRP: scaling and root planning

This Poster was submitted by Dr. med. dent. Bettina Dannewitz.

Correspondence address:

Dr. med. dent. Bettina Dannewitz

Sektion Parodontologie
 Poliklinik für Zahnerhaltungskunde
 Klinik für Mund-, Zahn- und Kieferkrankheiten
 Universitätsklinikum Heidelberg
 Im Neuenheimer Feld 400
 69120 Heidelberg
 Germany

1723

Long-term success of furcation therapy in molars. A retrospective analysis

DANNEWITZ B, KIM T-S, EICKHOLZ P

Section of Periodontology, Dept. of Operative Dent. and Periodontology, Clinic of Dental Medicine, University Clinic of Heidelberg, Germany



Furcation involvement (FI) is a risk factor for tooth loss. Treatment of multirooted teeth with furcation involvement aims to improve the prognosis of the teeth and to prolong their retention in the oral cavity. The purpose of this retrospective study was to assess the long-term success after therapy of furcation involved molars.

Material and Methods

Patients

- 70 patients (40 females and 30 males)
- Mean age at the beginning of periodontal therapy 46 ± 9 years (from 20 to 59 years)
- Inclusion criteria: periodontal therapy of at least one molar; at least 5 years of maintenance care (MC)

Assessment of furcation involvement (FI)

- Baseline clinical or intraoperative measurement of the FI (Fig. 2)

- FI was assessed with a curved, scaled probe (C-2N [SS+SSC] Nabers colour coded, Hu-Friedy, Chicago, IL, USA) according to the following classification of Hamp et al. [1975]:

- degree 0: the furcation is not probable
- degree I: horizontal loss of periodontal tissue support < 3 mm
- degree II: horizontal loss of support > 3 mm, but not encompassing the total width of the furcation
- degree III: horizontal through-and-through destruction of the periodontal tissue in the furcation

- In case of different degrees of FI in one tooth, the molar was characterized by the most severe furcation defect

Periodontal therapy

- Periodontal therapy was carried out in the Section of Periodontology, University of Heidelberg during the years 1992 to 1996.

- Therapy comprised two sequential stages of treatment:

- Active periodontal therapy (AT), professional cleaning and oral hygiene instructions, and if required further periodontal surgery (scaling and root planning [SRP], flap-surgery, tunnel preparation, root-resection, regenerative therapy)

- Maintenance care (MC), was scheduled between 3 months and one year according to the patient's individual risk for periodontal disease progression

- The mean follow-up period was 77 months (between 60 and 123 months)

Statistical analysis

- Descriptive analysis of the data (mean, standard deviation), statistical analysis with the Chi-square-test

- Survival rate of the molars was calculated in relation to jaw, tooth type, and degree of FI using the Kaplan-Meier analysis and displayed as survival curve over the follow-up period (Statsoft for Windows, version 10.0, Sylstat Inc., Evanston, IL, USA)

Results

- At baseline of periodontal therapy the 70 patients presented a total of 501 molars (Tab. 1):

- Maxilla: 243 (48.5%), mandible: 258 (51.5%)

- First molars: 191 (38.1%); second molars: 239 (47.7%); third molars: 71 (14.2%)

- degree 0: 195 (38.9%); degree I: 119 (23.8%); degree II: 122 (24.3%); degree III: 65 (13%)

- 72.8% of the maxillary molars had a probable FI but only 50% of the mandibular molars (p<0.001)

- FI of degree II or III was significantly more frequent in the maxilla (48.1%) compared to the mandible (27.1%, p<0.001)

- AT (Tab. 2): 27 molars did not receive any further periodontal treatment (5.4%; 22 of them without FI), 126 molars were subjected to non-surgical therapy (SRP: 25.1%), and 230 to flap-surgery (46.0%); tunnel preparation was performed in 12 molars (2.4%), root-resection in 18 (3.6%), and regenerative therapy in 56 teeth (11.2%); 32 molars were extracted (6.4%)

- MC (Tab. 3): further 27 molars were lost (6%, maxilla: 13; mandible: 10) from 1 up to 82 months after AT (mean 26 ± 24 months)

- Molars with degree III FI revealed the highest mortality (36%; AT: 22%; MC: 14%); 18 out of a total of 21 extracted molars with a baseline degree III FI were maxillary teeth

- Molars displaying a degree III FI showed a statistically significant lower survival probability compared with molars devoid of FI or degree I and II FI (p<0.05, Fig. 7)

Conclusions

- After therapy, the prognosis of molars with baseline degree I and II FI was similar to that of molars without FI.

- Mandibular molars with degree III FI seem to have a better prognosis than maxillary molars with degree III FI.

Correspondence to

Dr. Bettina Dannewitz
Section of Periodontology, Department of Operative Dentistry and Periodontology
Im Neuenheimer Feld 400, D-69120 Heidelberg
phone: +49-6221-56 60 20
FAX: +49-6221-56 60 74
email: bettina.dannewitz@med.uni-heidelberg.de

Tab. 1: Number of molars at the beginning of periodontal therapy

FI (degree)	MAXILLA (n=243)			MANDIBULA (n=258)			total number
	0	1	2	0	1	2	
0	15	21	20	35	39	25	195
I	25	38	5	26	25	1	119
II	37	38	2	18	25	1	122
III	21	18	1	13	17	0	65
total number	98	107	28	92	102	43	501

Tab. 2: Treatment of the molars in the active periodontal therapy (AT)

FI (degree)	MAXILLA (n=243)			MANDIBULA (n=258)			total number
	0	1	2	0	1	2	
0	15	21	20	35	39	25	195
I	25	38	5	26	25	1	119
II	37	38	2	18	25	1	122
III	21	18	1	13	17	0	65
total number	98	107	28	92	102	43	501

Tab. 3: Toothloss during the maintenance care (MC)

FI (degree)	MAXILLA (n=13)			MANDIBULA (n=10)			total number
	0	1	2	0	1	2	
0	1	2	0	1	2	0	6
I	2	3	0	1	2	0	8
II	3	4	0	2	3	0	12
III	4	4	1	4	1	0	14
total number	10	13	1	8	8	0	27

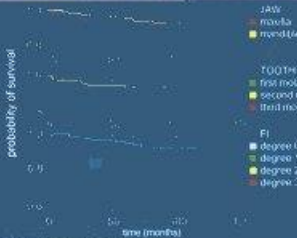


Fig. 7: Survival rate of the molars